

WARM-UP

① Solve the system: (for x, y , and z)

$$\textcircled{1} \begin{cases} x + 2y + 3z = 6 \\ 3x - y = 2 \\ x + 4y = 8 \end{cases} \xrightarrow{\text{solve for } x} \begin{cases} x = -2y - 3z + 6 \\ 3x - y = 2 \\ (x + 4y = 8)(-3) \rightarrow \end{cases}$$

$$\begin{aligned} & \xrightarrow{\quad} \begin{cases} 3x - y = 2 \\ \underline{3x - 12y = -24} \end{cases} \\ & -13y = -22 \end{aligned}$$

$$y = \frac{22}{13} = 1.7$$

$$x + 4\left(\frac{22}{13}\right) = 8$$

$$\begin{aligned} x + \frac{88}{13} &= 8 \\ x &= 8 - \frac{88}{13} \\ x &= \frac{104 - 88}{13} \\ x &= \frac{16}{13} = 1.23 \end{aligned}$$

$$x + 2y + 3z = 6$$

$$1.23 + 2(1.7) + 3z = 6$$

$$z =$$

Warmup:

1. The person eating ice cream lives in the brown house.
2. The person playing Basketball lives to the right of the pink house.
3. The person playing Volleyball lives in the magenta house.
4. The person eating waffles lives directly to the right of the brown house.

So, who lives in what house? And what do they eat?

O maybe
X it is there!

pink
brown
ice cream

Houses	1	2	3
Color: magenta			X
yellow	X	X	
black		X	
Food: eggs		X	
waffles			X
cookies	X		
Sport: Ice Hockey	X		
Basketball		X	
Volleyball			X

Solving Systems w/ 3 equations (via Elimination)

$$\begin{array}{l} \textcircled{1} \quad x - 3y + 3z = -4 \\ \textcircled{2} \quad 2x + 3y - z = 15 \\ \textcircled{3} \quad 4x - 3y - z = 19 \end{array}$$

STEP 1: Pair equations to eliminate y .

$$\begin{array}{ll} \textcircled{1} \quad x - \cancel{3y} + 3z = -4 & \textcircled{2} \quad 2x + \cancel{3y} - z = 15 \\ \textcircled{2} \quad 2x + \cancel{3y} - z = 15 & \textcircled{3} \quad 4x - \cancel{3y} - z = 19 \\ \hline \textcircled{4} \quad 3x + 2z = 11 & \textcircled{5} \quad 6x - 2z = 34 \end{array}$$

STEP 2: Write the two new equations as a system. And then solve.

$$\begin{array}{ll} \textcircled{4} \quad 3x + 2z = 11 & \textcircled{4} \quad 3(5) + 2z = 11 \\ \textcircled{5} \quad 6x - 2z = 34 & 15 + 2z = 11 \\ \hline 9x = 45 & -15 \quad -15 \\ \hline x = 5 & 2z = -4 \\ & z = -2 \end{array}$$

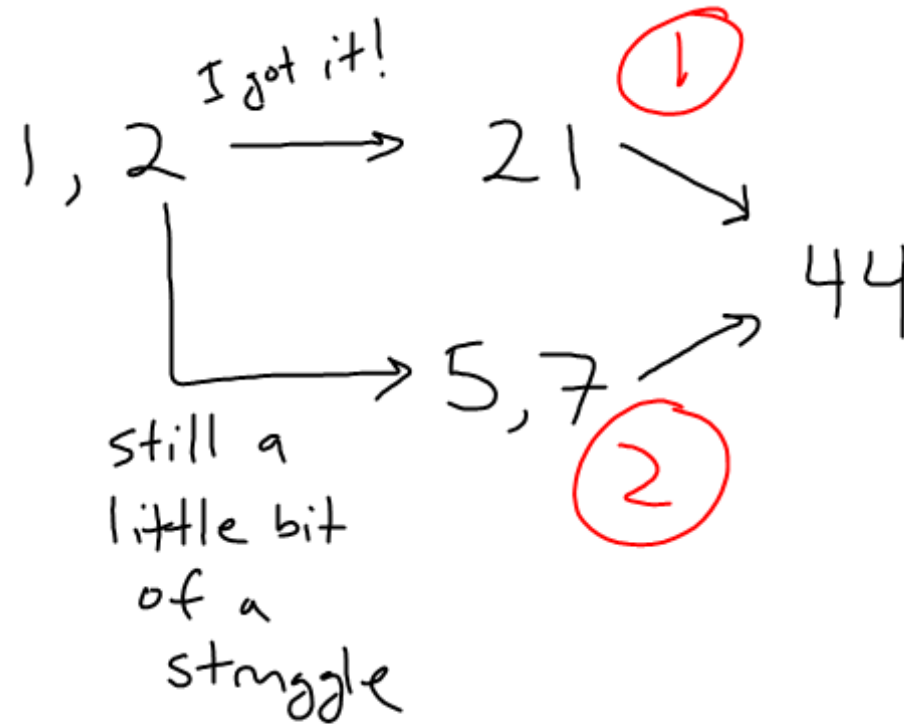
STEP 3: Plug into one of the starting equations

$$\begin{array}{l} \textcircled{1} \quad x - 3y + 3z = -4 \\ (5) - 3y + 3(-2) = -4 \\ 5 - 3y - 6 = -4 \\ -3y - 1 = -4 \\ +1 \quad +1 \\ \hline -3y = -3 \\ \hline y = 1 \end{array}$$

STEP 4: CHECK ALL OF THE ORIGINALS!

HW:

Sect: 3.6
p. 157



EXT. PROB: Due Tues.